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1967

# FOREST INSECT CONDITIONS

## IN THE NORTHERN REGION

# 1967

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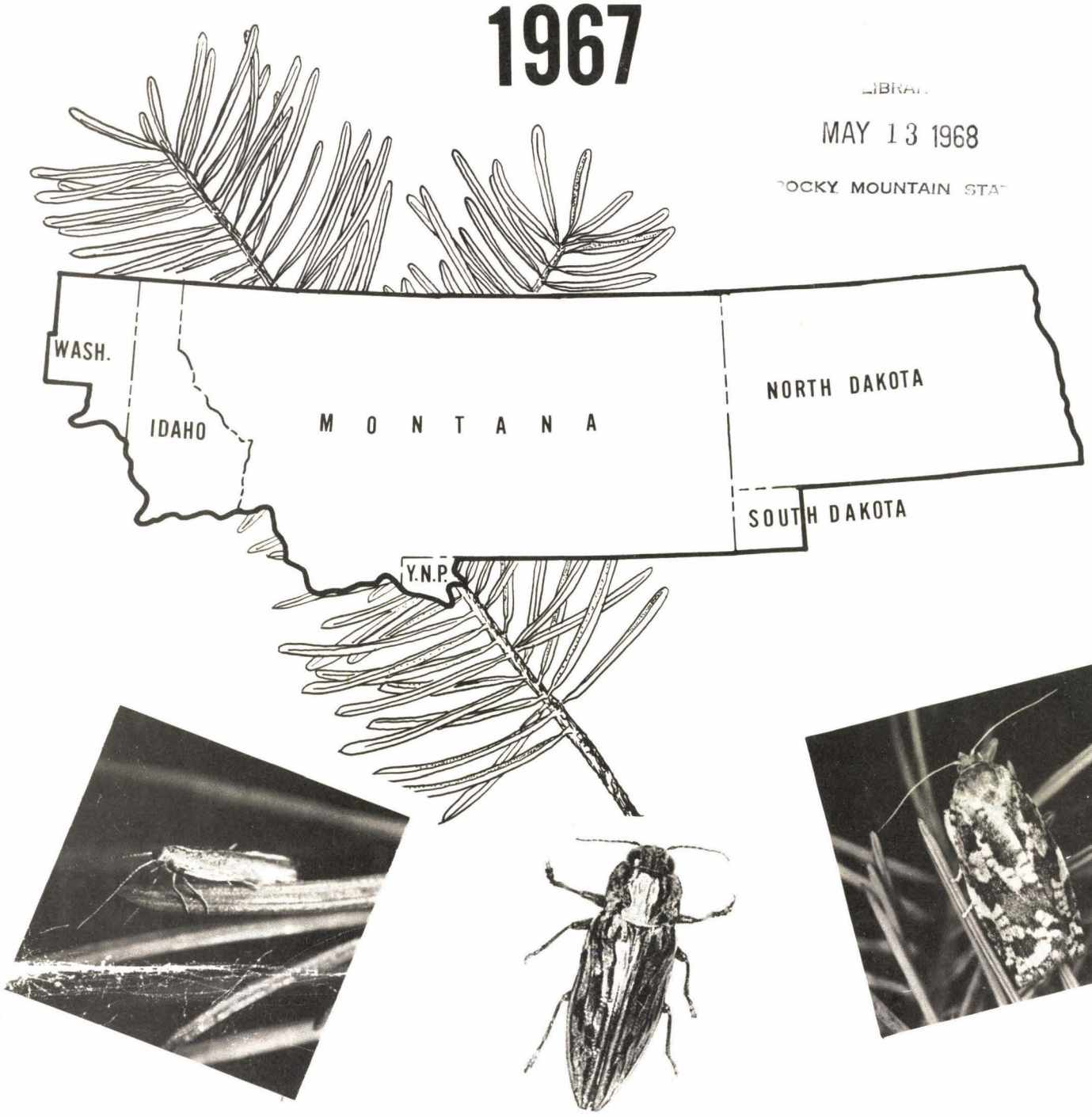

U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE
DIVISION OF STATE AND PRIVATE FORESTRY

MISSOULA, MONTANA

1380 (3000)

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Forest in Idaho.

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However, in most areas, damage losses occurred in
stands of low commercial value. A small control
the Wendover campground, Clearwater National Forest,
rees were felled and treated with ethylene dibromide
ed.

Dendroctonus obesus (Mann.). Mature and overmature
have been infested with this beetle in Montana.
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ng slash.

WEEVILS

Pissodes engelmanni Hopk. This insect has been
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Montana, and Pinkham Creek south of Eureka, Montana.
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s with considerable terminal killing include Clarkia
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water National Forest, Idaho; and in Montana, south
of Butte. Of the weevils collected, about 18 percent
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g is expected to be at about the same level next year.

# FOREST INSECT CONDITIONS IN THE NORTHERN REGION 1967

Compiled by

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Forest Pest Control Branch

## CONDITIONS IN BRIEF

Outbreaks of the mountain pine beetle increased in lodgepole and ponderosa pine stands in Montana. The most severe outbreaks occurred in ponderosa pine stands on the Lewis and Clark and Helena National Forests. The beetle populations increased in two lodgepole pine stands near St. Regis, Montana, and continued to take their toll of mature western white pine in northern Idaho. Over 25,000 ponderosa pine were killed by the pine engraver along major drainages of the Clark Fork and Kootenai Rivers in Montana and Idaho. Spruce budworm activity has decreased east of the Continental Divide in Montana. West of the Divide infestations have increased in size and have spread to both the north and west. Heavy defoliation occurred throughout the Lolo National Forest, Montana. Larch casebearer infestations spread eastward into the Bitter Root Valley and up the main Clark Fork River east of Missoula. Tree mortality has been noted in stands having 10 years of heavy defoliation. The cause has not been identified. The sugar pine tortrix caused extensive defoliation to lodgepole pine stands in Montana, Idaho, and Yellowstone National Park. Natural factors reduced populations of the larch sawfly to endemic levels. Infestations of the larch bud moth decreased from 518,000 acres in 1966 to 110,000 in 1967 in Montana. Seed and cone insects destroyed a large portion of Douglas-fir seed crop in some areas of eastern Montana. The Engelmann spruce weevil caused moderate to heavy terminal killing of Engelmann spruce reproduction and saplings within open grown spruce reproduction sites in northern Idaho and western Montana. Black-headed budworm infestations continued to decrease in northern Idaho and Montana. Tent caterpillars caused moderate to heavy defoliation on chokecherry, alder, elderberry, and other shrubs throughout the Region. The pine tussock moth outbreak in the Ashland, Montana, area has subsided and now affects only 200 acres.

## BARK BEETLES

MOUNTAIN PINE BEETLE, Dendroctonus ponderosae Hopkins. Damage by the mountain pine beetle has been increasing in ponderosa pine stands in eastern Montana since 1963. Approximately 2,000 trees are currently infested near Monarch Mountain on the Belt Creek District, Lewis and Clark National Forest. An additional 2,000 trees are currently infested on private land near Helena, Montana. Infestations are also prevalent within the Judith River drainage, southeast of Lewistown, and along the foothills of the Big and Little Snowy

Mountains. Many groups containing 5 to 100 dying ponderosa pine were detected on the Helena, Bitterroot, and Lolo National Forests.

In western Montana, large numbers of ponderosa pine trees top-killed by Ips pini contained mountain pine beetle broods. These infestations extended north along the Bitter Root and Clark Fork Valleys from Darby to Trout Creek, Montana.

For the past several years, populations have been increasing in two lodgepole pine stands on State and private lands near St. Regis, Montana. Approximately 5,000 trees are infested on about 600 acres.

The mountain pine beetle problem in mature western white pine stands on the Kaniksu, Coeur d'Alene, St. Joe, and Clearwater National Forests in Idaho has not changed for many years. From 1 to 2½ percent of the mature timber is killed each year by this beetle over an area of about 150,000 acres of western white pine. Infestations are still active near the mouth and along both shores of the Hungry Horse Reservoir, Montana. They have been there since the early 1960's and will probably kill most of the mature western white pine in those stands.

Mountain pine beetle damage is expected to continue in all infested areas during 1968.

PINE ENGRAVER, Ips pini (Say). The second consecutive bad Ips year was 1967. An estimated 50,000 ponderosa pine were killed by Ips during 1967. The downward trend predicted for 1967 did not materialize. A repeated hot, dry spring and summer may have contributed to the buildup of Ips beetles in slash and green trees in western Montana.

Recently killed trees in groups of 5 to 1,000 were detected along the Clark Fork River from Drummond, Montana, west to St. Regis, Montana. Major outbreaks occurred along the Bitterroot River Valley south of Missoula, Montana, and in the Blackfoot River drainage north of Missoula. The Flathead Valley from St. Ignatius to Kalispell also received heavy Ips kill.

Logging and tree disturbance resulting from construction of the Libby Dam contributed to a buildup of beetle broods in weakened trees along the Kootenai River.

A chronic infestation still persists along the east side of the Salmon River south of Grangeville, Idaho. Ips activity in lodgepole pine continued west of Careywood and north of Hayden Village near Coeur d'Alene, Idaho.

If Ips populations are as closely connected to climatic conditions as has often been suggested, it will be difficult to predict future trends.

DOUGLAS-FIR BEETLE, Dendroctonus pseudotsugae Hopk. Populations remained at low levels again in 1967. Douglas-fir beetles have killed approximately 70 trees near Rogers Pass, north of Lincoln, Montana. Other smaller groups of trees were killed on the Kootenai and Bitterroot National Forests of Montana, and the Kaniksu National Forest in Idaho.

FIR ENGRAVER BEETLE, Scolytus ventralis Lec. Tree killing by this beetle increased in grand and subalpine fir stands of the Clearwater and St. Joe National Forests, Idaho. However, in most areas, damage losses occurred in inaccessible, overmature stands of low commercial value. A small control project was necessary in the Wendover campground, Clearwater National Forest, where approximately 80 trees were felled and treated with ethylene dibromide or were removed and burned.

ENGELMANN SPRUCE BEETLE, Dendroctonus obesus (Mann.). Mature and overmature Engelmann spruce stands have been infested with this beetle in Montana. Hundreds of trees have been killed in Whale, Canyon, and Teepee Creeks on the Glacier View Ranger District north of Columbia Falls. About the same number of trees can be expected to be killed next season if the emerging population is not absorbed in logging slash.

## WEEVILS

ENGELMANN SPRUCE WEEVIL, Pissodes engelmanni Hopk. This insect has been damaging to the terminals of spruce reproduction wherever the host is available in this Region (fig. 1). Heaviest damage was observed in Emery and Good Creeks near Martin City, Montana, and Pinkham Creek south of Eureka, Montana. Over 30 percent of the terminals of spruce reproduction in Emery Creek have been killed. Other areas with considerable terminal killing include Clarkia and Avery Ranger Districts, St. Joe National Forest, Idaho; Beaver and Washington Creeks, Clearwater National Forest, Idaho; and in Montana, south of Cooke City and south of Butte. Of the weevils collected, about 18 percent were parasitized by species of Hymenoptera and Diptera, and an additional 36 percent of the broods died during the larval and pupal stages from unknown causes. Terminal killing is expected to be at about the same level next year.

Figure 1.--Damage to Engelmann regeneration by Engelmann spruce weevil.

## DEFOLIATORS

SPRUCE BUDWORM, Choristoneura occidentalis Freeman. The long-standing spruce budworm epidemic in Montana is still active. Heaviest and most extensive damage occurred on the Helena National Forest. This infestation has remained at a high level for many years. Damage has steadily decreased in the past several years on the Deerlodge, Beaverhead, Custer, and Lewis and Clark National Forests. Scattered infestations were observed along the Yellowstone and Boulder River drainages on the Gallatin National Forest. West of the Continental Divide, damage decreased on the southern part of the Bitterroot National Forest, but increased on the northern portion. Infestations increased on the Lolo National Forest and spread north into the Flathead National Forest and west into northern Idaho.

An outbreak which produced heavy damage on the east half of the Nezperce National Forest, Idaho, has spread steadily towards its western borders. An infestation covering about 12,000 acres of mostly grand fir and spruce in 1966 increased to more than 100,000 acres in 1967 on the Powell District, Clearwater National Forest, Idaho.

The northwest corner of Yellowstone National Park, Wyoming, had a slight increase in budworm damage during 1967. About 10,000 acres were infested.

Egg masses were more numerous (table 1) this fall than any time since 1964. This suggests that barring other factors, budworm populations should be higher in 1968 than they have been for the past few years.

Budworm infestations are expected to again spread north and west next year.

Table 1.--Annual measurements of factors affecting the trend of spruce budworm infestations

| Factor | 1959 | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | MONTANA | | | | |
| Percent defoliation | 38.00 | 34.00 | 37.00 | 25.00 | 35.00 | 35.00 | 38.00 | 25.00 | 14.00 |
| Egg masses per M sq. in. of foliage | 10.40 | 4.10 | 8.40 | 10.50 | 9.50 | 11.90 | 5.33 ±1.05 | 3.12 ±1.19 | 8.30 |
| Percent egg parasitism | 3.80 | 1.00 | 4.30 | 6.00 | .00 | 1.10 | .50 | .00 | 5.80 |
| | | | | | IDAHO | | | | |
| Percent defoliation | | | | | | | 1/60.00 | 2/40.00 | 3/54.00 |
| Egg masses per M sq. in. of foliage | | | | | | | 2.43 ±.99 | 5.07 ±1.07 | 11.24 |
| Percent egg parasitism | | | | | | | .00 | .00 | 4.40 |

1/ Data from three plots.

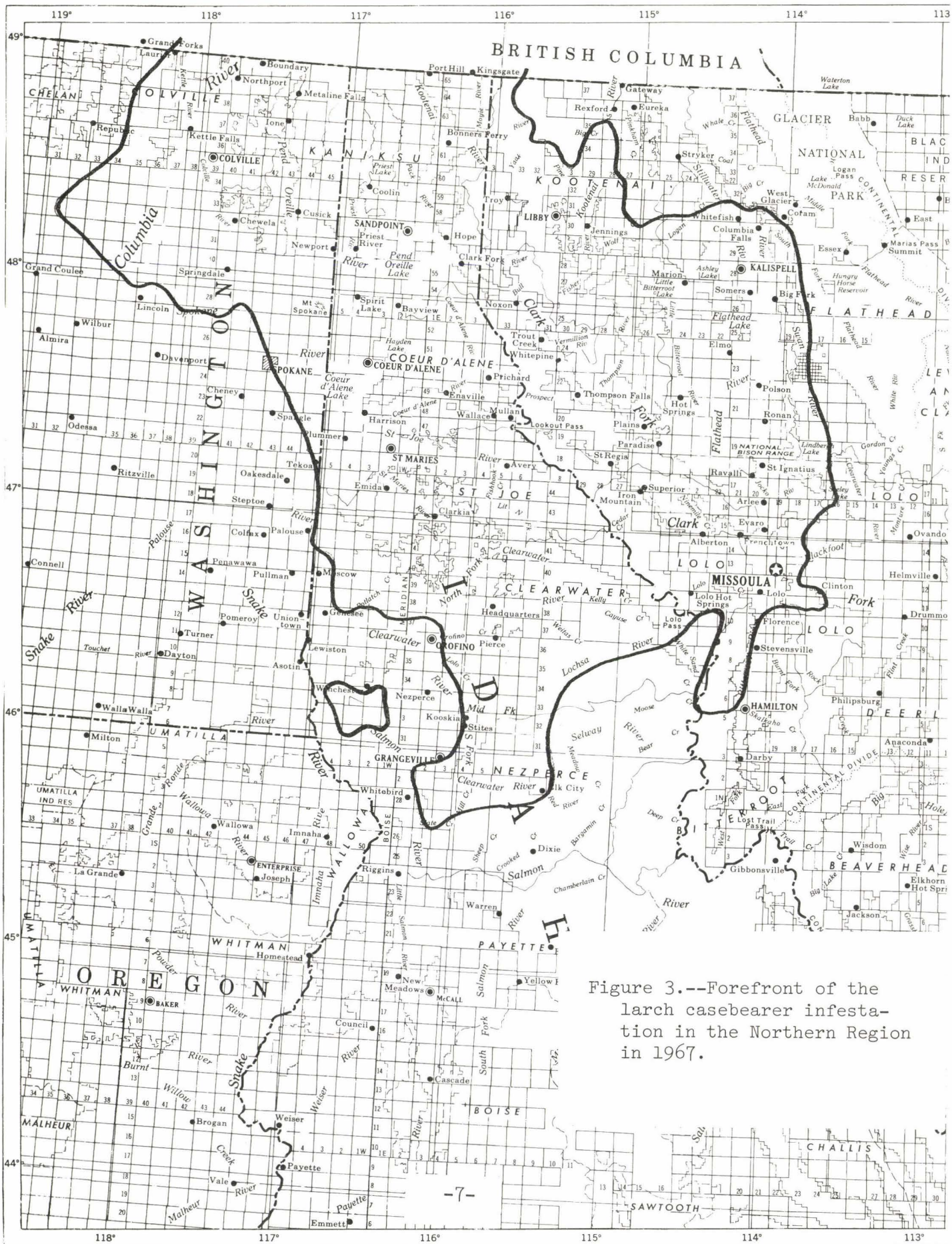
2/ Data from eight plots.

3/ Data from eleven plots.

LARCH CASEBEARER, Coleophora laricella (Hbn.). Epidemic infestations of the larch casebearer continued to spread through larch stands of the Northern Region (fig. 2). Infestation boundaries extend north into British Columbia; east to the Flathead and Bitter Root Valleys in Montana; south almost to the Salmon River in Idaho; and as far west as the Columbia River in eastern Washington (fig. 3). Tree mortality is occurring after 10 years of heavy defoliation near St. Maries and Falls, Idaho. However, the complexes which may be involved have as yet not been identified.

Figure 2.--Feeding larch casebearer larva.

The parasitic wasp of casebearer, Agathis pumila (Ratz.), has become well established in some release plots in the Region. Over 500,000 parasites were released during 1967. Parasite distribution will be continued in 1968.


BRITISH COLUMBIA
WASHINGTON
OREGON
IDAHO
COLVILLE
KANIKSU
KOOTENAI
SANDPOINT
COEUR D'ALENE
POKANE
ST MARIES
LIBBY
KALISPELL
MISSOULA
HAMILTON
COLVILLE
ENTERPRISE
BAKER
GRANGEVILLE
CROFINO
Columbia River
Snake River
Clearwater River
Kootenai River
Pend Oreille River
Spokane River
St Joe River
Clark Fork River
Flathead River
Bitterroot River
Lochsa River
Selway River
Salmon River
Grande Ronde River
Wallowa River
Imnaha River
Powder River
Burnt River
Malheur River
Payette River
Weiser River
Boise River
Coeur d'Alene Lake
Hayden Lake
Pend Oreille Lake
Priest Lake
Flathead Lake
Lake McDonald
Waterton Lake
Swan River
Thompson River
Fishhook Creek
Lolo Creek
Lolo Pass
Lost Trail Pass
Continental Divide
Glacier National Park
Logan Pass
Marias Pass Summit
Hungry Horse Reservoir
Big Fork
Columbia Falls
Whitefish
Stryker
Troy
Bonners Ferry
Port Hill
Kingsgate
Gateway
Rexford
Eureka
Waterton Lake
Duck Lake
Babb
Cut Bank
Browning
Blackfeet Indian Reservation
Glacier National Park
Essex
Java
Somers
Marion
Elmo
Polson
Ronan
St Ignatius
Ravalli
Arlee
Evaro
Alberton
Frenchtown
Superior
Iron Mountain
Paradise
St Regis
Plains
Hot Springs
Thompson Falls
Prospect
Noxon
Trout Creek
Whitepine
Prichard
Enaville
Wallace
Mullan
Lookout Pass
Harrison
Coeur d'Alene
Rathdrum
Spirit Lake
Bayview
Mt Spokane
Spokane
Cheney
Davenport
Wilbur
Almira
Lincoln
Springdale
Grand Coulee
Chewelah
Cusick
Newport
Priest River
Coolin
Metaline Falls
Ione
Republic
Kettle Falls
Northport
Boundary
Grand Forks
Laurier
Odessa
Ritzville
Oakesdale
Tekoa
Steptoe
Colfax
Palouse
Pullman
Moscow
Genesee
Union-town
Pomeroy
Turner
Dayton
Touchet
Asotin
Lewiston
Connell
Penawawa
Walla Walla
Milton
Umatilla
Umatilla Ind Res
Whitebird
Grangeville
Nezperce
Kooskia
Stites
Orofino
Pierce
Headquarters
Weitas Cr
Kelly Cr
Lolo Hot Springs
Florence
Stevensville
Lolo
Clinton
Helmville
Drummond
Philipsburg
Anaconda
Darby
Wisdom
Gibbonsville
Elkhorn Hot Springs
Jackson
Dixie
Riggins
Warren
Yellow Pine
New Meadows
McCall
Council
Cascade
Weiser
Brogan
Payette
Vale
Emmett
Homestead
Whitman
Wallowa
Imnaha
La Grande
Joseph
Milton
Walla Walla
Ritzville
Davenport
Cheney
Spangle
Plummer

SUGAR PINE TORTRIX, Choristoneura lambertiana (Busck) Freeman. Epidemic populations of the sugar pine tortrix defoliated new growth of lodgepole pine on thousands of acres on the Flathead, Lolo, Bitterroot, and Kootenai National Forests in western Montana; Nezperce National Forest, Idaho; and in Glacier and Yellowstone National Parks (figs. 4 and 5).

Figure 4.--Damage to lodgepole pine by sugar pine tortrix.

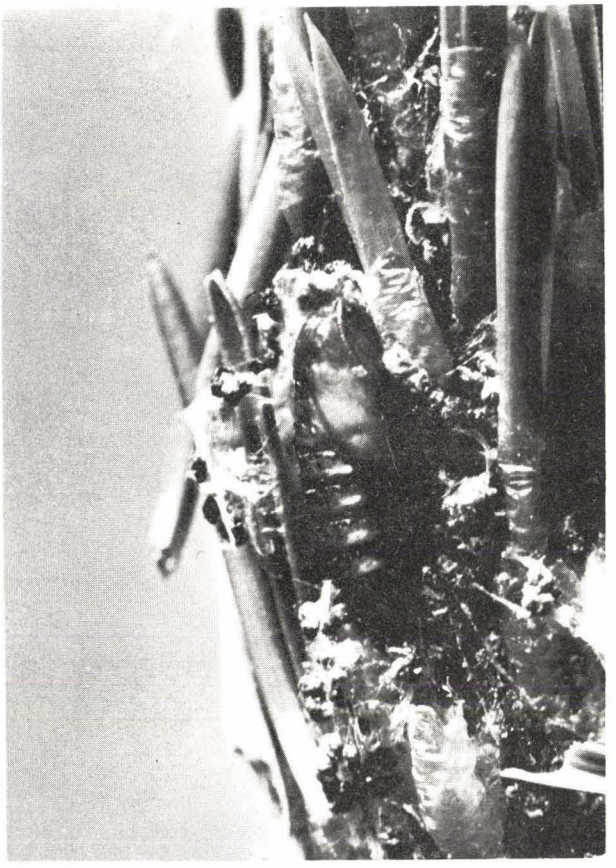


Figure 5.--Sugar pine tortrix pupa.

Suspected infestations of this insect in conjunction with the pine needle sheath miner caused moderate to severe defoliation of lodgepole pine on approximately 168,000 acres of the Flathead National Forest in 1963.

Heavy defoliation this year occurred in the Fred Burr Creek drainage, Bitterroot National Forest; Nezperce National Forest near Grangeville, Idaho; and the Flathead National Forest near Martin City, Montana. Damage was confined to current growth. New foliage was completely removed in areas of heaviest feeding. Ponderosa pine reproduction and saplings were moderately defoliated on the Flathead National Forest near Glacier National Park.

Size of area infested and intensity of defoliation is expected to remain about the same in 1968.

LARCH SAWFLY, Pristiphora erichsonii (Htg.). A decrease in size of area infested and numbers of larch sawflies was observed in larch stands on the Kaniksu, Clearwater, St. Joe, and Nezperce National Forests in Idaho, and Kootenai and Flathead National Forests in western Montana during 1967. Pupal counts showed a significant decrease in number of pupae over last year. Laboratory rearing of overwintering pupae showed heavy larval parasitism in some localities.

A downward trend is expected next year.

LARCH BUD MOTH, Zeiraphera griseana (Hbn.). Defoliation of larch by this insect decreased from 518,000 acres in 1966 to less than 110,000 in 1967. Light to heavy defoliation was detected on approximately 105,000 acres on the Coram, Hungry Horse, North Fork, and Tally Lake Ranger Districts, Flathead National Forest, Montana. Heaviest defoliation occurred in larger trees near ridgetops. Defoliation ranged from 30 percent in lower crowns upwards to 80 to 90 percent in the upper one-third of the crown.

Damage is expected to be light throughout the Region in 1968.

BLACK-HEADED BUDWORM, Acleris variana (Fernald). Acreage of defoliation decreased from 35,000 acres in 1966 to about 6,000 acres in 1967. Infestations were detected on about 4,200 acres of hemlock and subalpine fir trees in the Lightning Creek on the Kaniksu National Forest, Idaho. Very light defoliation occurred on 800 acres in O'Brien Creek and 1,300 acres in Boulder Creek on the Kootenai National Forest, Montana. Infestations are in low-value stands.

TENT CATERPILLARS, Malacosoma spp. and Archips spp. Moderate to heavy defoliation of chokecherry, alder, and elderberry was noticeable throughout much of Montana and Idaho (fig. 6). Numerous tents of Malacosoma californicum lutescens (N. and D.) and the ugly nest caterpillar, Archips cerasivoranus Fitch, were observed in Montana on the Custer National Forest, near Absarokee; along the Madison River southeast of Bozeman; near Canyon Ferry Dam northeast of Helena; and along the Blackfoot River north of Missoula. Tent caterpillar populations are expected to remain at about the same level throughout the Region in 1968.

Figure 6.--Tent caterpillars on chokecherry.

PINE TUSSOCK MOTH, Dasychira sp. near or equal grisefacta Dyar. Populations of this tussock moth on ponderosa pine were reduced to a low level by natural factors on the Custer National Forest. Surveys showed only about 200 acres of pine contained visible defoliation. Little defoliation is expected in 1968.

PINE BUTTERFLY, Neophasia menapia Feld. This insect caused light defoliation in ponderosa pine, Bitterroot National Forest, Montana. Populations are expected to be endemic in 1968.

## OTHER INSECTS

PITCH MASS BORER, Vespamima spp. Pitch mass borers accounted for limited group killing of lodgepole and ponderosa pines near St. Regis, Montana. Minor infestations were also observed in Glacier National Park.

SEED AND CONE INSECTS. Evaluations conducted on nine permanent plots east of the Continental Divide in Montana show that a high percentage of Douglas-fir seed was destroyed by insects. The primary insect involved was the spruce budworm, Choristoneura occidentalis Freeman (fig. 7). Others of lesser importance were the fir cone worm, Dioryctria abietella (D. and S.) (fig. 8); a midge, Contarinia washingtonensis Johnson; and the Douglas-fir seed chalcid, Megastigmus spermotrophus Wachtl.

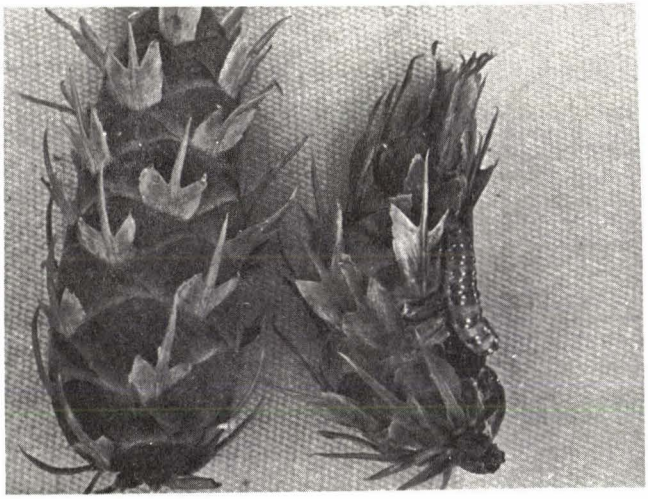


Figure 7.--Healthy cone and one deformed by spruce budworm.

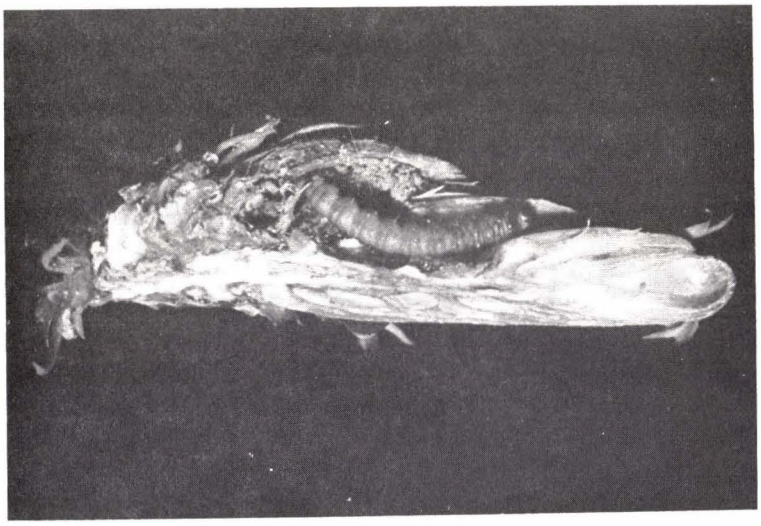


Figure 8.--Fir cone worm in Douglas-fir cone.

Approximately 80 percent of the cones studied were infested with one or more insects. Injury to the cones ranged from very minor to total cone destruction. Evaluations of plots already established will be continued in 1968. Additional plots will be established on the west-side Forests to determine insect populations and trends in cones of other tree species.